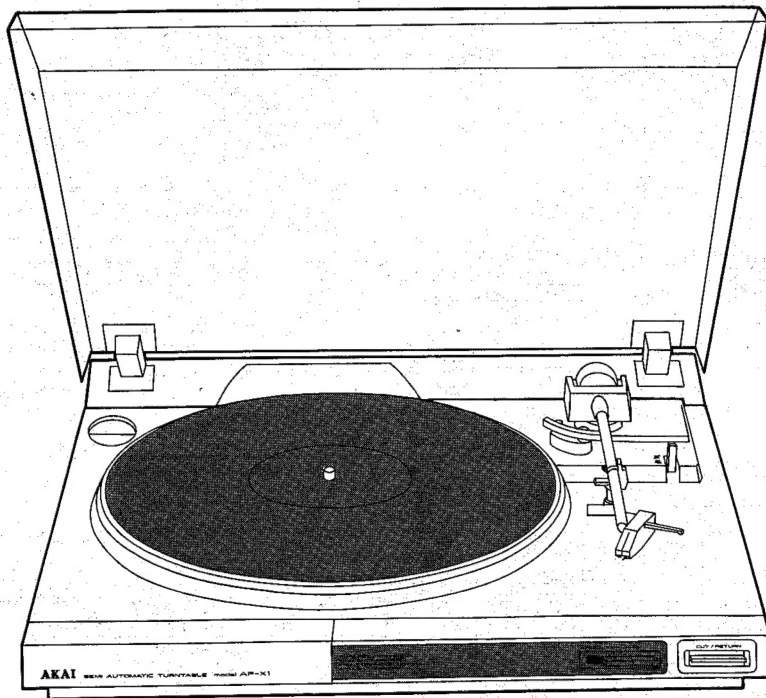


AKAI SERVICE MANUAL



SEMI AUTOMATIC TURNTABLE

MODEL **AP-X1/C**

ABBREVIATIONS FOR SERVICE MANUAL MODEL AP-X1/C

ABBREVIATION	EXPLANATION
AC	Alternating Current
ADJ	ADJustment
DC	Direct Current
D.D. motor	Direct Drive motor
FG	Frequency Generator
H (level)	High
HE.	Hall Element
L (level)	Low
LIM	LIMiter
SHC	Sample & Hold with Capacitor
SHCR	Sample & Hold with Capacitor and Resistor
SW	SWitch
TPG	Timing Pulse Generator
V REF.	Voltage REFerence



SEMI AUTOMATIC TURNTABLE

MODEL **AP-X1/C**

SECTION 1	SERVICE MANUAL	3
SECTION 2	PARTS LIST	11

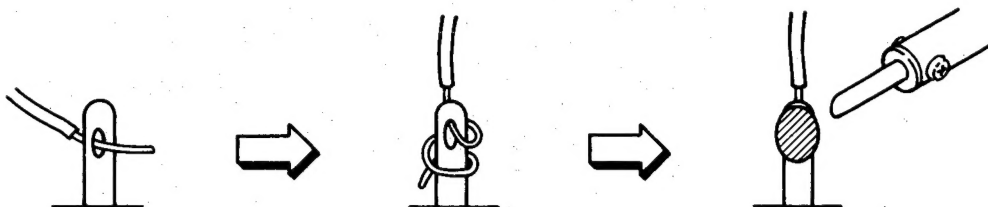
SAFETY INSTRUCTIONS

SAFETY CHECK AFTER SERVICING

Confirm the specified insulation resistance between power cord plug prongs and externally exposed parts of the set is greater than 10 Mohms, but for equipment with external antenna terminals (tuner, receiver, etc.) and is intended for **C** or **A**, specified insulation resistance should be more than 2.2 Mohms (ground terminals, microphone jacks, headphone jacks, line-in-out jacks etc.)

PRECAUTIONS DURING SERVICING

1. Parts identified by the Δ symbol parts are critical for safety.
Replace only with parts number specified.
2. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation. These must also be replaced only with specified replacements.
Examples: RF converters, tuner units, antenna selector switches, RF cables, noise blocking capacitors, noise blocking filters, etc.
3. Use specified internal wiring. Note especially:
 - 1) Wires covered with PVC tubing
 - 2) Double insulated wires
 - 3) High voltage leads
4. Use specified insulating materials for hazardous live parts. Note especially:
 - 1) Insulation Tape
 - 2) PVC tubing
 - 3) Spacers (Insulating Barriers)
 - 4) Insulation sheets for transistors
 - 5) Plastic screws for fixing microswitch (especially in turntable)
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap ends of wires securely about the terminals before soldering.

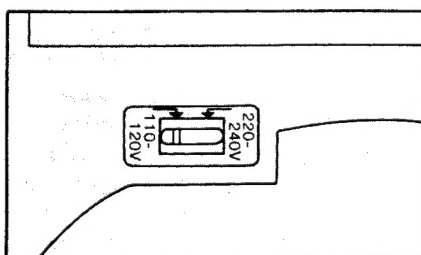


6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).
7. Check that replaced wires do not contact sharp edged or pointed parts.
8. Also check areas surrounding repaired locations.
9. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

VOLTAGE CONVERSION

Models for USA, CANADA, EUROPE, UK and AUSTRALIA are not equipped with this facility, each machine is preset at the factory according to it's destination, but **U** model can be set to 110V ~ 120V or 220V ~ 240V as required. If the machine's voltage can be converted.

1. Disconnect AC power cord.
2. Remove the rubber mat and platter. (Refer to II. Dismantling of unit)
3. Move the VOLTAGE SELECTOR located on the top of the cabinet with a screw driver where the correct voltage is indicated.



SECTION 1


SERVICE MANUAL

TABLE OF CONTENTS

I.	SPECIFICATIONS	4
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For basic adjustments, measuring methods, and operating principles, refer to GENERAL TECHNICAL MANUAL.

I. SPECIFICATIONS

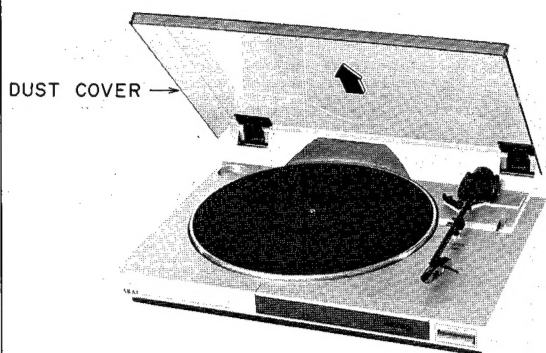
TURNTABLE (PLATTER)	Aluminum alloy diecast
DRIVE SYSTEM	Belt drive
MOTOR	FG servo DC motor
SPEED	33-1/3 & 45 rpm
WOW & FLUTTER	0.05% (WRMS)
RUMBLE	70 dB (DIN-B)
TO NEARM	Static balanced type
EFFECTIVE ARM LENGTH	220 mm
STYLUS PRESSURE	1.25 g (fixed)
APPLICABLE CARTRIDGE WEIGHT	5.9 g
ARM LIFTER	Oil damped
OVER HANG	15 mm
CARTRIDGE	VM type (PC-35/  plug-in type/cartridge is included with the AP-X1-C only)
OUTPUT VOLTAGE	2.5 mV
CHANNEL SEPARATION	more than 20 dB
OPTIMAL STYLUS PRESSURE	1.25 g
POWER REQUIREMENTS	120V, 60 Hz for USA & Canada 220V, 50 Hz for European except UK 240V, 50 Hz for UK & Australia 110 – 120V/220 – 240V 50/60 Hz convertible for other countries
DIMENSIONS	440 (W) × 103 (H) × 345 (D) mm (17.3 × 4.1 × 13.6 inches)
WEIGHT	3.4 kg (7.5 lbs)

* For improvement purposes, specifications and design are subject to change without notice.

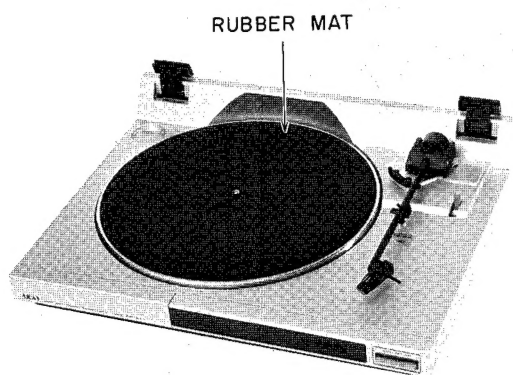
II. DISMANTLING OF UNIT

In case of trouble, etc. necessitating dismantling, please dismantle in the order shown in the photographs. Reassemble in reverse order.

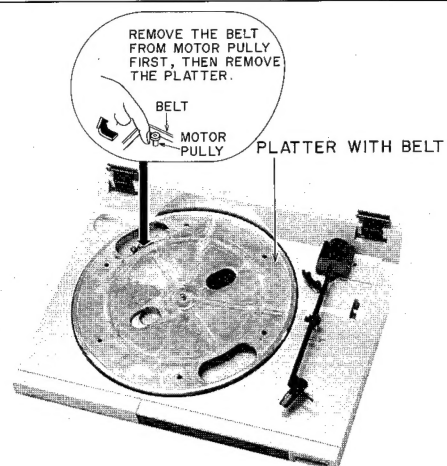
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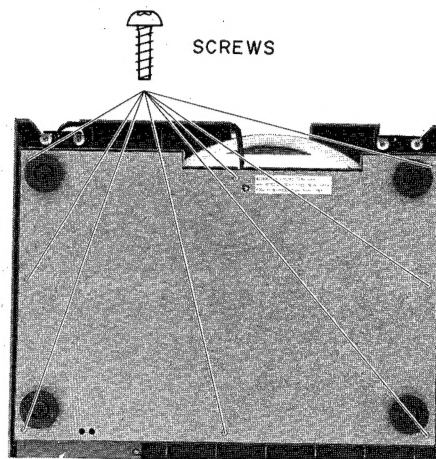
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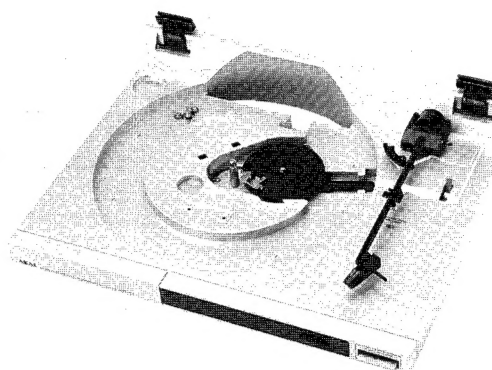
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4



5



III. CONTROLS

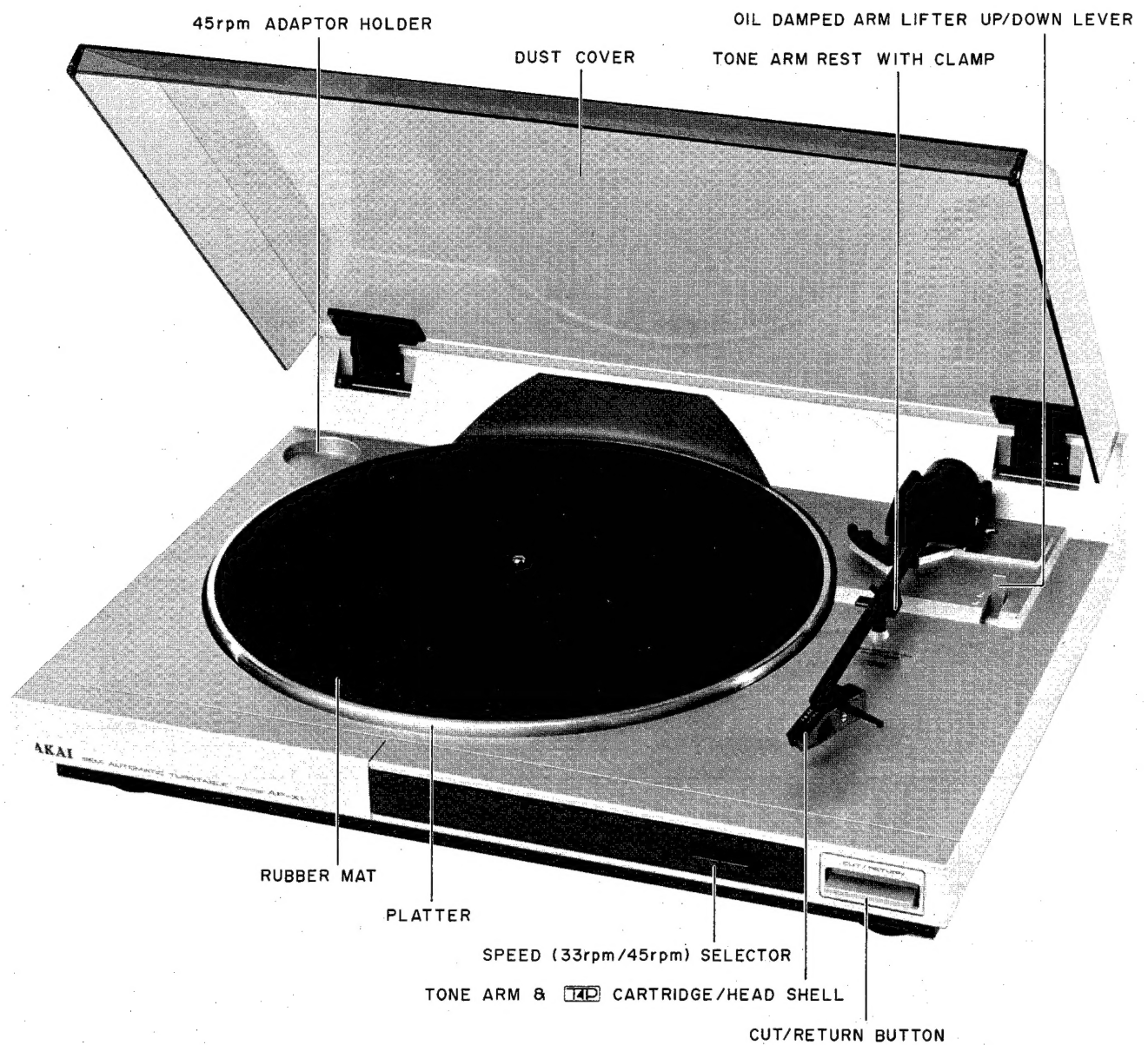


Fig. 3-1

IV. PRINCIPAL PARTS LOCATION

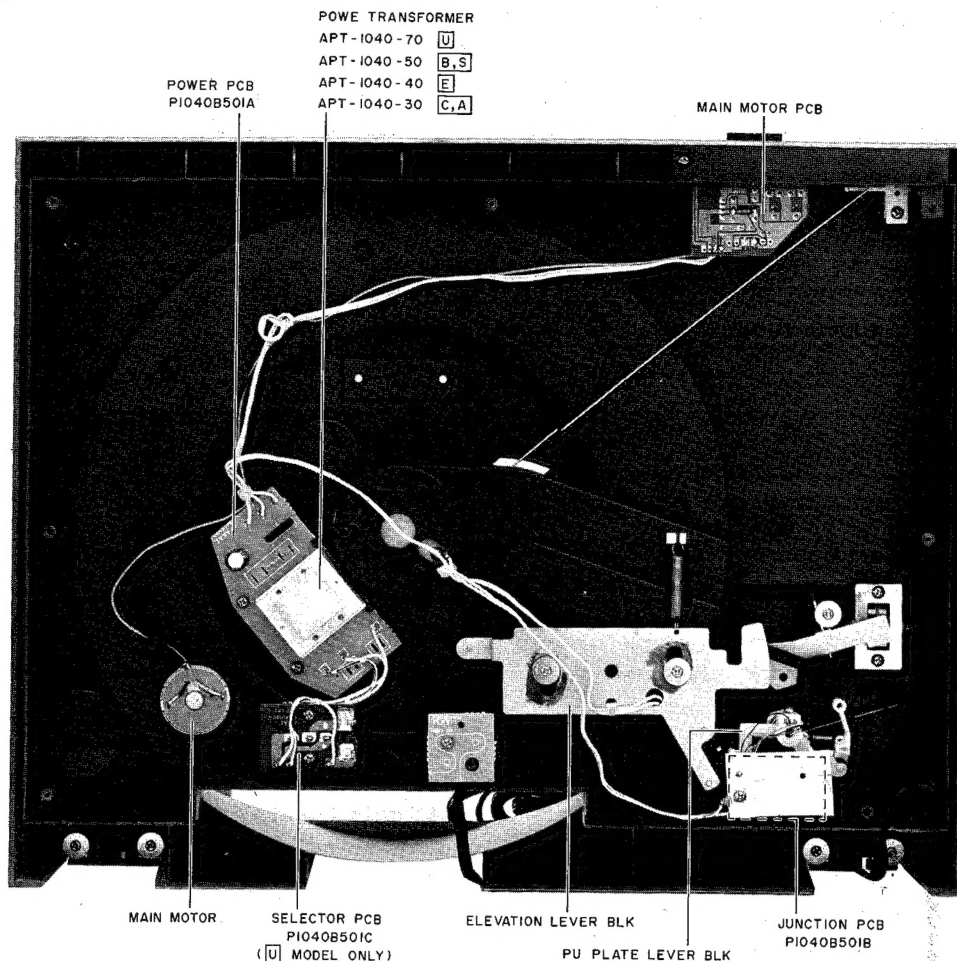


Fig. 4-1

V. REPLACEMENT OF CARTRIDGE AND TONE ARM ASSEMBLY

5-1 HOW TO CHANGE OR INSTALL THE CARTRIDGE (Refer to Fig. 5-1)

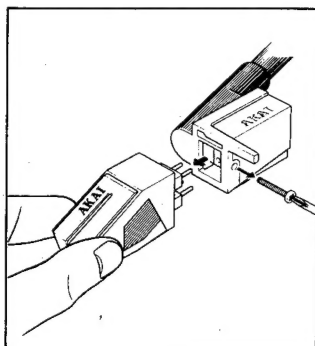


Fig. 5-1

With the tone arm on the tone arm rest and clamped, remove the screw on the side of the tone arm (directly behind the cartridge) by using a screwdriver.

After removing the screw, grasp the cartridge firmly and pull it forward, away from the tone arm, until it is free. Replace the new cartridge by reversing the above operation.

In order to enjoy the full capability of the Akai AP-X1, please note the following when changing the cartridge.

- Replace the cartridge with one which has the same output voltage (2.5mV/1 kHz, 5cm/sec peak).
- [14P] is the standard mark for plug-in connectors. Connectors with this mark are compatible with each other. The Akai AP-X1C is equipped with a high quality VM cartridge, but any cartridge with the [14P] mark can be used.
- Let's protect the records
Do not touch the grooves when handling the record. Dirty grooves will produce distortions. Store records standing in a well ventilated place, relatively free of dust.
- Don't interrupt any movement
Do not touch the tone arm or the platter and do not turn off the power under the following conditions:
 - During record playback
 - When the tone arm is moving automatically
 - When the platter is turning
- Be sure.
The ARM LIFTER is in the down (▼) position before attempting to clamp the tone arm to the tone arm rest.

5-2 HOW TO REPLACE THE TONE ARM ASSEMBLY

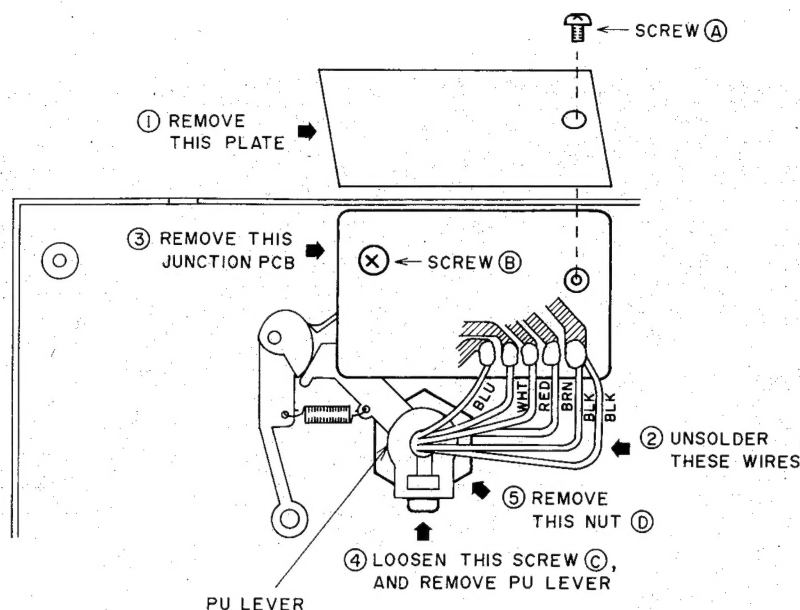


Fig. 5-2

- 1) Unscrew (A) and remove the shield plate.
- 2) Remove the wires from Tone Arm Assembly.
- 3) Unscrew (B) and remove the JUNCTION PCB.
- 4) Loosen screw (C) and remove the PU lever.
- 5) Unscrew the Nut (D) and Remove the Tone Arm Assembly.
- 6) Install the New Tone Arm Assembly and do the reverse way.

After replaced the Tone Arm, PU LEVER position Adjustment is necessary as follow.

- 3) Turn the PU LEVER so that the corner of those PU LEVER and Micro Switch are coincide as shown in Fig. 5-3.
- 4) Tighten the screw (C).
- 5) Move the Tone Arm to the spindle side, and confirm that micro switch is switched "ON" at about center between Tone Arm Rest position and Platter as shown in Fig. 5-4.

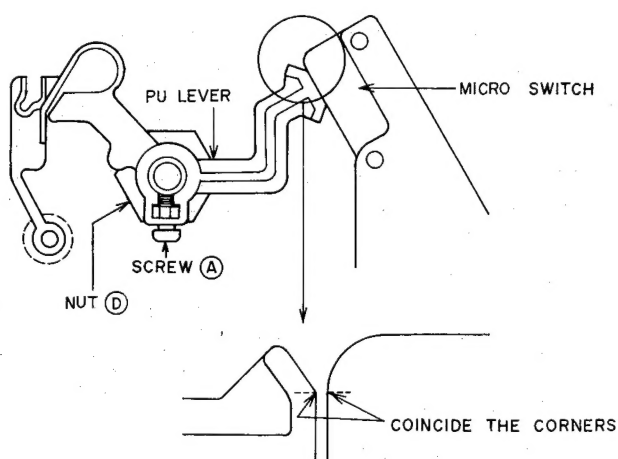


Fig. 5-3

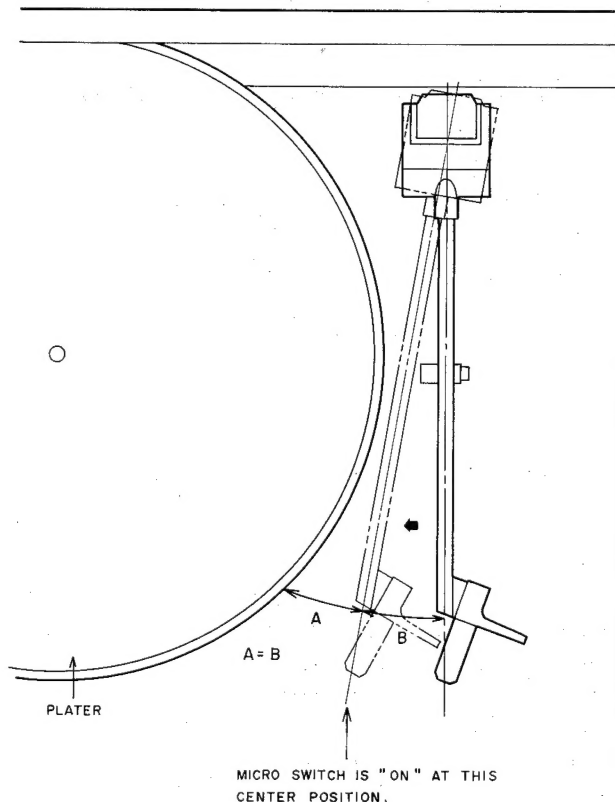


Fig. 5-4

- 1) Lock the Tone Arm on the TONE ARM REST.
- 2) Loosen the Screw (C), and Confirm that the PU LEVER is installed all the way in to the Nut (D).

VI. GENERAL ADJUSTMENT

6-1 TONE ARM LIFTER HEIGHT ADJUSTMENT (Refer to Fig. 6-1, 6-2)

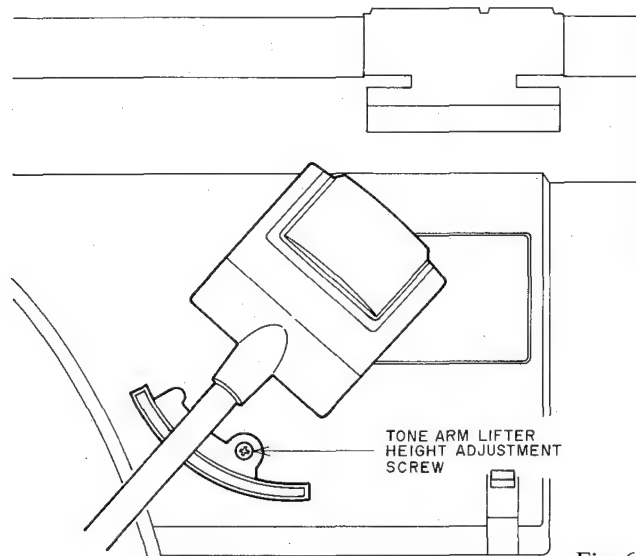


Fig. 6-1

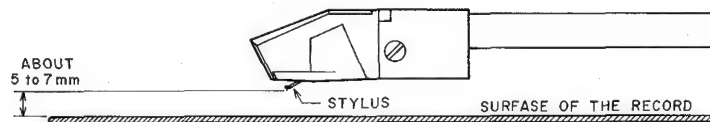


Fig. 6-2

With the Tone Arm in the up-position, the stylus should be about 6 mm above the surface of the record.
If it is not, adjust the height by adjusting the TONE

ARM HEIGHT ADJUSTMENT SCREW.

Clockwise: Down

Counterclockwise: Up

6-2 AUTO-RETURN ADJUSTMENT (Refer to Fig. 6-3)

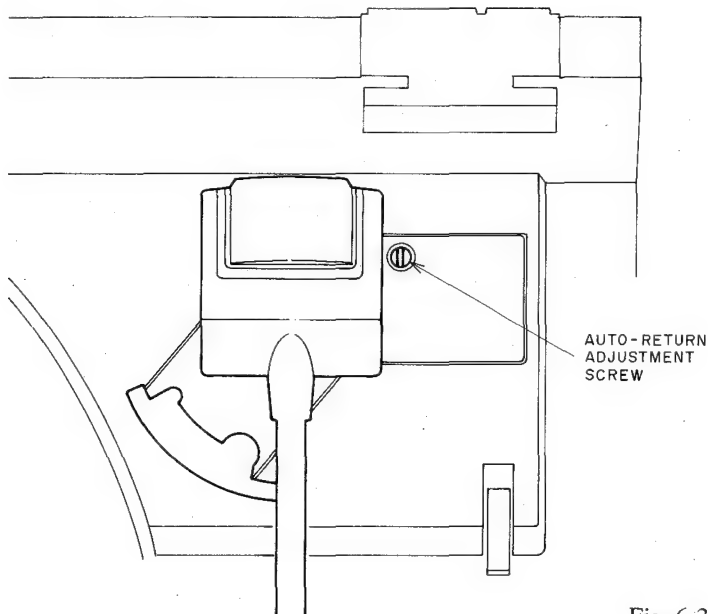


Fig. 6-3

If the Tone Arm does not return automatically to the TONE ARM REST at the end of record.
Adjust Auto-return Adjustment screw as follow.

* If the tone arm return before the end of the record
→ Turn the Auto-Return Adjustment Screw Clock-
wise.

* If the tone arm does not return at the end of record
→ Turn the Auto-Return Adjustment Screw Counter-
clockwise.

CAUTION: Do not turn the Auto-Return Adjustment screw too much.

VII. ELECTRICAL ADJUSTMENT

7-1 SPEED ADJUSTMENT

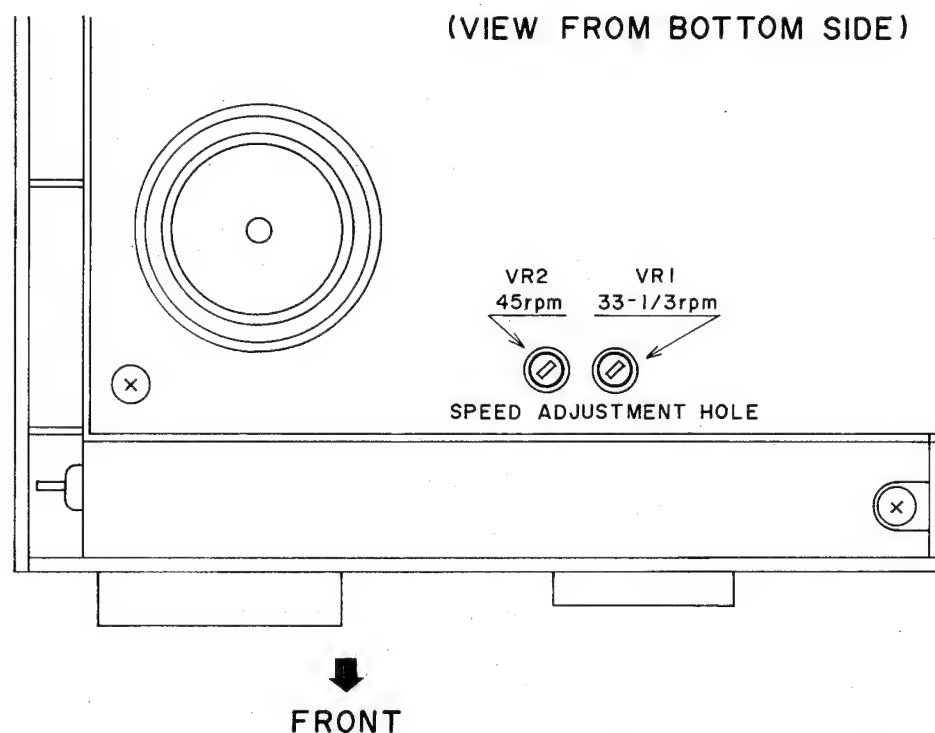


Fig. 7-1 Speed Adjustment Points

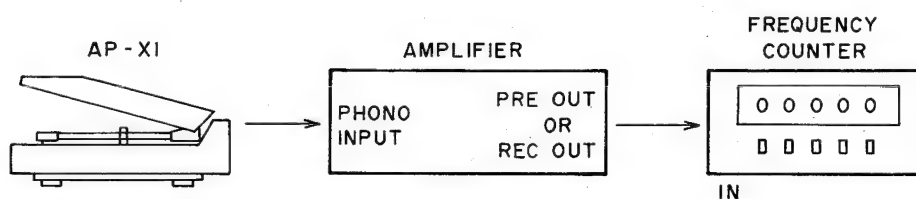


Fig. 7-2 Instruments Connection

- 1) Connect a Amplifier and Frequency counter as shown in Fig. 7-2.
- 2) Set the Speed Selector to 33-1/3 rpm.
- 3) Play back the Test Record (1000 Hz, 33-1/3 rpm), and Adjust VR1 so that the speed is 995 ± 3 Hz.

- 4) Set the Speed Selector to 45 rpm.
- 5) Play back the Test Record (1000 Hz, 45 rpm), and Adjust VR2 so that the speed is 1350 ± 5 Hz.

NOTE: This Speed Adjustment should be adjust 33-1/3 rpm position first then adjust 45 rpm next.

VIII. PC BOARD TITLES AND IDENTIFICATION NUMBERS

PC Board Title		PC Board Number	Remarks
POWER	PC BOARD	P1040B501A	
JUNCTION	PC BOARD	P1040B501B	
SELECTOR	PC BOARD	P1040B501C	U model only
MOTOR	PC BOARD		

SECTION 2

PARTS LIST

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RECOMMENDED SPARE PARTS	13
1. POWER SUPPLY PC BOARD	13
2. SELECTOR PC BOARD (U ONLY)	13
3. MAIN MOTOR PC BOARD	13
4. FINAL ASSEMBLY BLOCK	14
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Resistors and Capacitors which are not listed in this parts list, please refer to COMMON LIST FOR SERVICE PARTS.

ATTENTION

1. When placing an order for parts, be sure to list the parts no., model no., and description. There are instances in which if any of this information is omitted, parts cannot be shipped or the wrong parts will be delivered.
2. Please be careful not to make a mistake in the parts no. If the parts no. is in error, a part different from the one ordered may be delivered.
3. Because parts number and parts unit supply in the Preliminary Parts List may be partially changed, please use this parts list for all future reference.

HOW TO USE THIS PARTS LIST

1. This Parts List shows the parts that are considered necessary for repairs. Other parts, such as resistors and capacitors, are shown in the "Common List for Service Parts". Select and order such parts from the "Common List for Service Parts".
2. The Recommended Spare Parts shows those parts in the Parts List which are considered particularly important for service.
3. Parts not shown in the Parts List and "Common List for Service Parts" will not be supplied in principle.
4. How to read list

a) Mechanism Block

b) P.C Board Block

2. HEAD BASE BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
2-1x	BH-T2023A320A	HEAD BASE BLOCK GX-F66R
2-2	HP-H2206A010A	HEAD R/P PR4-8FU C
2-3	ZS-477876	PAN20x03STL CMT
2-4	ZS-536488	BID20x08STL CMT
2-5	ZG-402895	CS ANGLE ADJUST SPRING

SP (Service Parts) Classification

A small "x" indicates the inability to show that particular part in the Photo or Illustration.

This number corresponds with the individual parts index number in that figure

This number corresponds with the Figure Number

6. SYS. CON. P.C BOARD BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
6-1	BA-T2034A070A	PC SYS CON BLK GX-F44R
6-IC1	EI-324536	IC HD14049BP
6-IC2	EI-336801	IC MB8841-564M
6-IC3	EI-331661	IC SN7405N
6-IC4	EI-336725	IC M54527P
6-TR1to4	ET-200985	TR 2SC2603 F,G
6-TR5to28	ET-554657	TR 2SA733A P,Q
6-D1	ED-318292	D SILICON H 1S2473T-77 T26
6-D2to4	ED-308952	D GERMA V 1K34A-LR F07
6-D5to10	ED-318292	D SILICON H 1S2473T-77 T26
6-X1	EI-318384	OSC X'TAL NC-18C

3.579545MHZ

SP (Service Parts) Classification

This reference numbers corresponds with symbol numbers of Schematic Diagrams.

5. Both the kind of part and installation position can be determined by the Parts Number. To determine where a parts number is listed, utilize Parts Index at end of Parts List. It is necessary first of all to find the Parts Number. This can be accomplished by using the Reference Number listed at right of parts number in the Parts Index.

WARNING

⚠ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

AVERTISSEMENT

⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SURETE. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT.

RECOMMENDED SPARE PARTS

Because, if the parts listed below are on hand, almost any repair can be accomplished, we suggest that you stock these Recommended Spare Parts Items.

NO.	PARTS NO.	DESCRIPTION
1	BT-354617	△ TRANS POWER APT-1040-30 (C,A)
2	BT-354618	△ TRANS POWER APT-1040-40 (E)
3	BT-354619	△ TRANS POWER APT-1040-50 (B,S)
4	BT-354616	△ TRANS POWER APT-1040-70 (U)
5	ED-322238	D SILICON 1B4B41 100/1.0A
6	N EI-357879	IC LA5512
7	ES-337898	△ SW SLIDE 00120163 01-2 (U)
8	ES-325488	SW MICRO K1
9	ES-353296	SW SLIDE SSY322
10	N EV-315416	R S-RIX H D8 3P 103
11	N EV-315412	R S-FIX H D8 3P 502
12	MB-302866	BELT
13	MB-343057	COVER CUSHION
14	MB-345351	RUBBER CUSHION

"NOTE" N: New Parts

SYMBOL FOR DESTINATION

A: AAL (U.S.A)
 B: UK (England)
 C: CSA (Canada)
 E: CEE (Europe)
 S: SAA (Australia)
 U: U/T (Universal Area)

1. POWER SUPPLY PC BOARD

REF. NO.	PARTS NO.	DESCRIPTION
1-D1	ED-322238	△ D SILICON 1B4B41 100/1.0A
1-T1A	BT-354616	△ TRANS POWER APT-1040-70 (U)
1-T1B	BT-354617	△ TRANS POWER APT-1040-30 (C,A)
1-T1C	BT-354618	△ TRANS POWER APT-1040-40 (E)
1-T1D	BT-354619	△ TRANS POWER APT-1040-50 (B,S)
1-1A	EW-374894	△ AC CORD 2 CORES VM-0129A, VFF U/T (U)
1-1B	EW-207742	△ AC CORD 2 CORES VM-0238, SPT-1 UC (C,A)
1-1C	EW-336923	△ AC CORD 2 CORES KP-419C, LTCE-2F EV (E)
1-1D	EW-347023	△ AC CORD LTBS-2F 42/0.15x2 B(B)
1-1E	EW-336924	△ AC CORD 2 CORES KP-560, LTSA02F S (S)

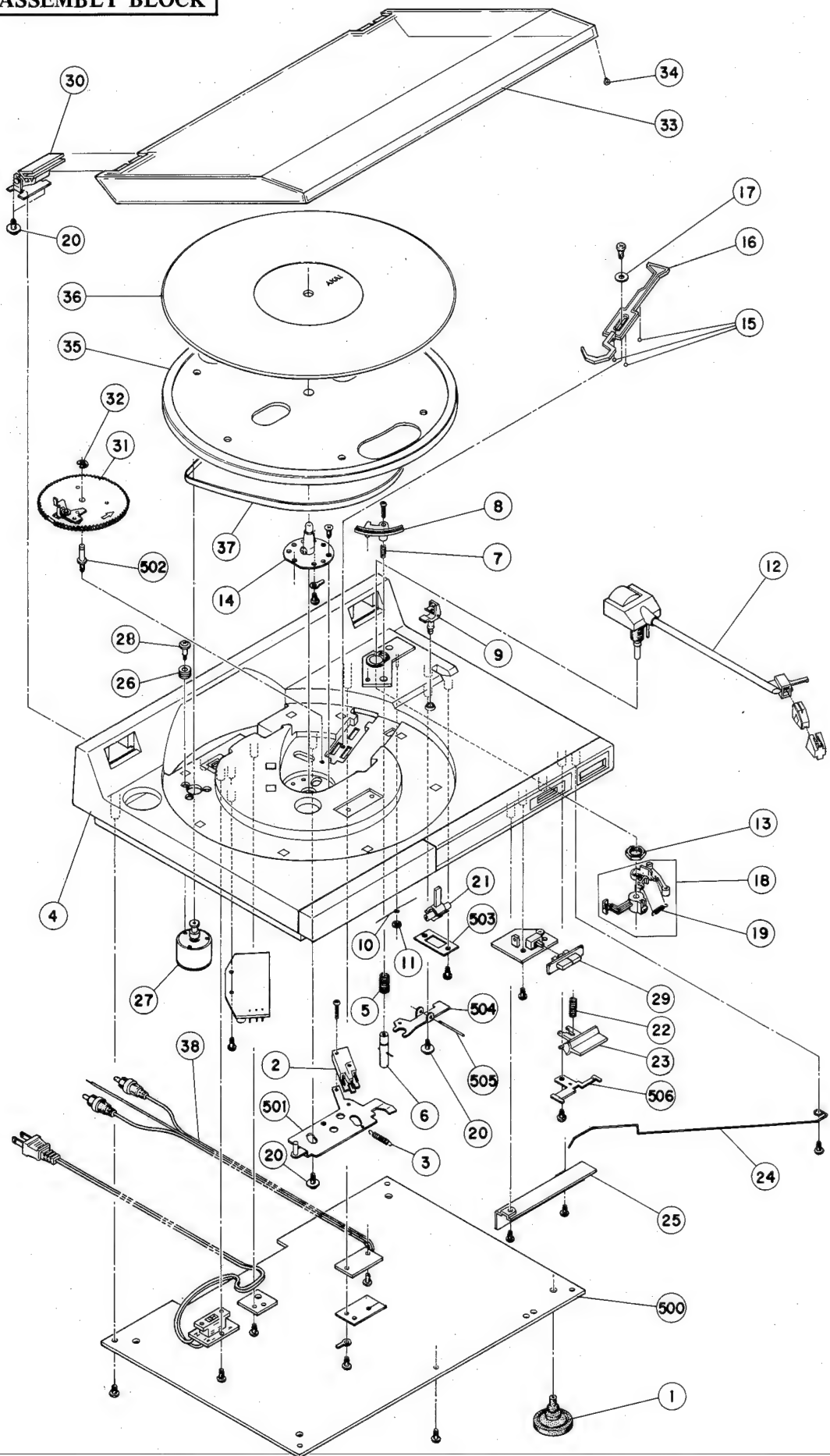
2. SELECTOR PC BOARD (U ONLY)

REF. NO.	PARTS NO.	DESCRIPTION
2-SW1	ES-337898	△ SW SLIDE 00120163 01-2

3. MAIN MOTOR PC BOARD

REF. NO.	PARTS NO.	DESCRIPTION
3-IC1	EI-357879	IC LA5512
3-SW1	ES-353296	SW SLIDE SSY322
3-VR1	EV-315412	R S-FIX H D8 3P 502
3-VR2	EV-315416	R S-FIX H D8 3P 103

FINAL ASSEMBLY BLOCK



4. FINAL ASSEMBLY BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
4-1	SA-332577	INSULATOR
4-2	ES-325488	SW MICRO K1
4-3	ZG-313073	SP T1-6.3/0.5-28.0 T1-185
4-4	BC-351733A	CABINET AP-X1
4-4P	BC-351733B	CABINET AP-X1-P
4-4B	BC-351733C	CABINET AP-X1-B
4-5	ZG-325402	SP ELEVATION
4-6	MS-353238	SHAFT ELEVATION
4-7	ZG-332548	SP PUSH (A)
4-8	TP-B332568	ARM ELEVATION PART
4-9	TP-B332571	CLAMPER ARM PART
4-10	ZG-353257	SP TORSION CANCELER
4-11	ZW-340648	RING CS190STL PKR
4-12	TP-351625	TONE ARM ARM-A1
4-13	ZW-325521	N120x170x30STL CMT P100
4-14	TP-349346	SPINDLE ASSY
4-15	MV-269965	BALL 400STL
4-16	ML-345348	LEVER AUTO
4-17	ZW-429120	PW23x090x050STL CMT
4-18	TP-P1037A040A	LEVER PU PLATE BLK AP-A2
4-19	ZG-312943	SP T1-3.2/0.29-11.2 T1-059
4-20	ZS-349118	SCREW W/FLANGE
4-21	SK-345362A	KNOB ELEVATION
4-21P	SK-345362B	KNOB ELEVATION-P
4-21B	SK-345462E	KNOB ELEVATION-B
4-22	ZG-313167	SP C-3.5/0.32-25.0 C-015
4-23	SK-351739	KNOB CUT
4-23P	SK-351739B	KNOB CUT-P
4-23B	SK-351739C	KNOB CUT-B
4-24	TP-351738	LEVER REJECT
4-25	SP-351734	COVER CABINET (EXCEPT BL)
4-25B	SP-351734B	COVER CABINET-B (BL)
4-26	MB-345351	RUBBER CUSHION
4-27	BM-354620	MOTOR BFD2R12
4-28	ZS-350767	SCREW
4-29	SK-351613A	KNOB SLIDE (EXCEPT BL)
4-29B	SK-351613B	KNOB SLIDE-B (BL)
4-30	TP-353712	HINGE ASSY AP-A2-C
4-31	TP-P1034A080A	MAIN GEAR BLK AP-B1
4-32	ZW-270101	RING E300SUP CMT
4-33	BC-B353247	DUST COVER PART
4-34	MB-343057	COVER CUSHION
4-35	TP-B348321B	PLATTER (B) PART
4-36	TP-348266B	TABLE SHEET B
4-37	MB-302866	BELT
4-38A	EW-325492	CORD 2P AUDIO (EXCEPT A)
4-38B	EW-344164	CORD 2P AUDIO PINx2 (A)
4-39x	ZW-345338	RV POP 32x76 (C,A)

SYMBOL FOR COLOR VARIATION

NON: STANDARD COLOR

P: PEARL SHADOW

B or BL: BLACK

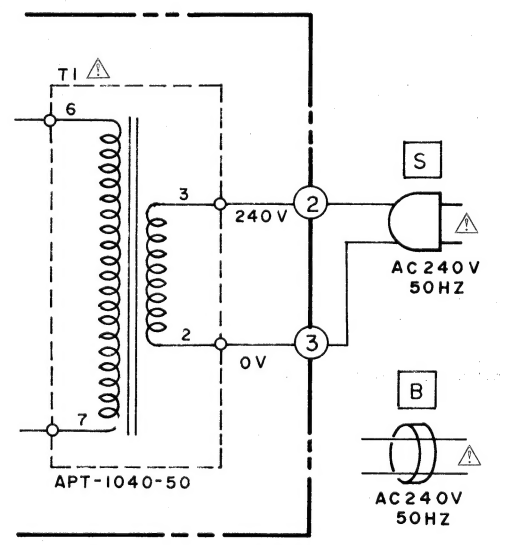
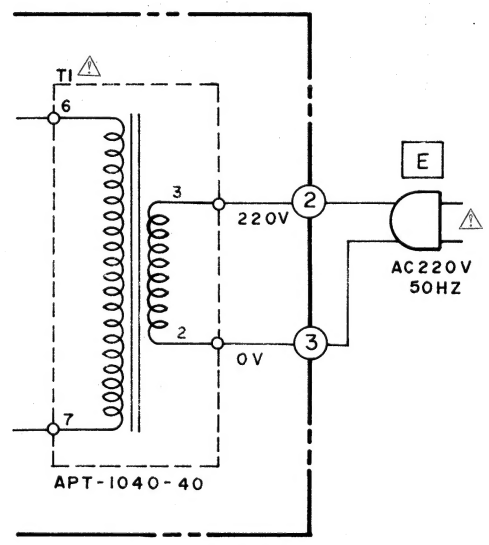
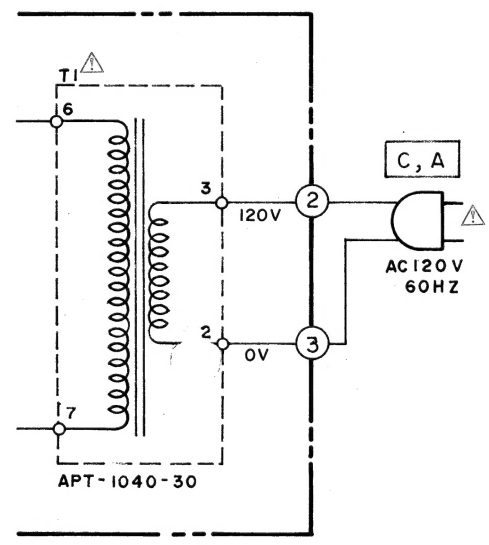
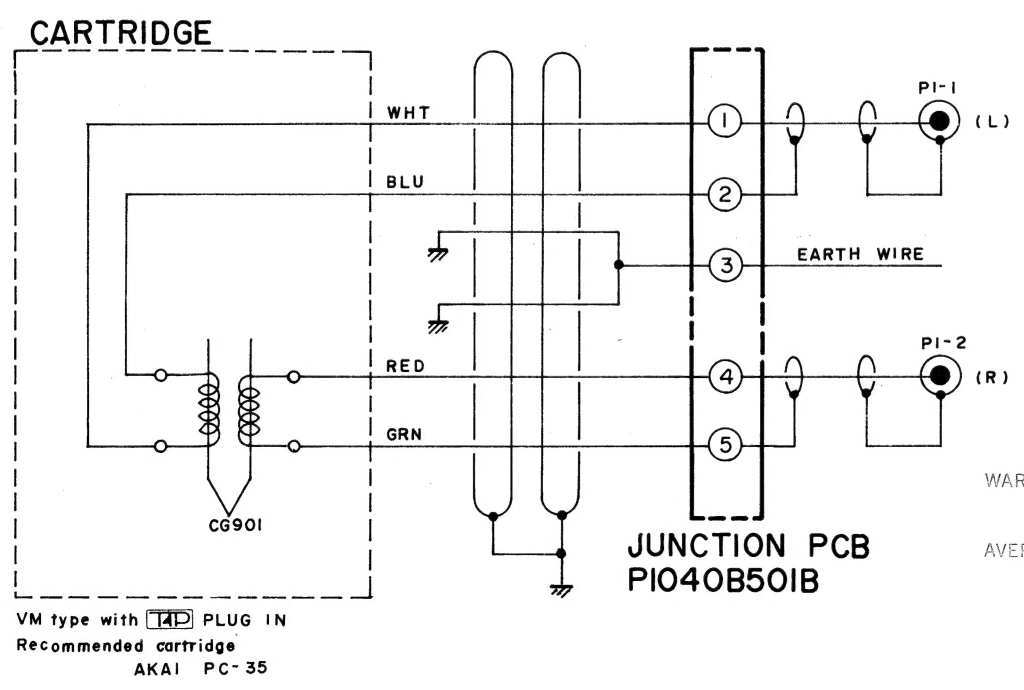
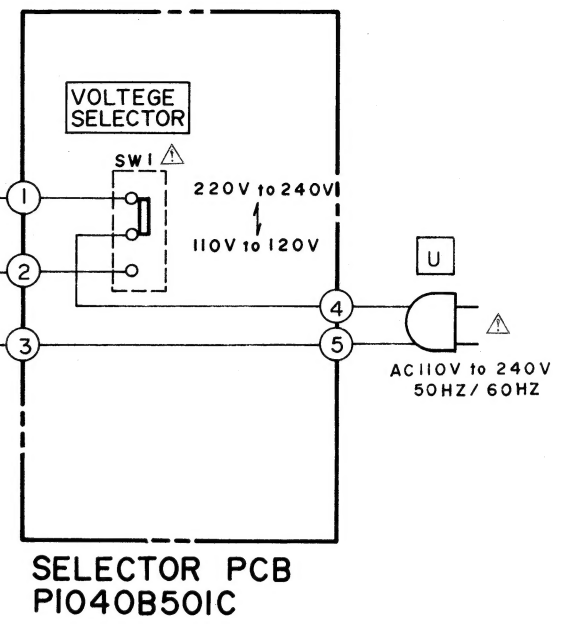
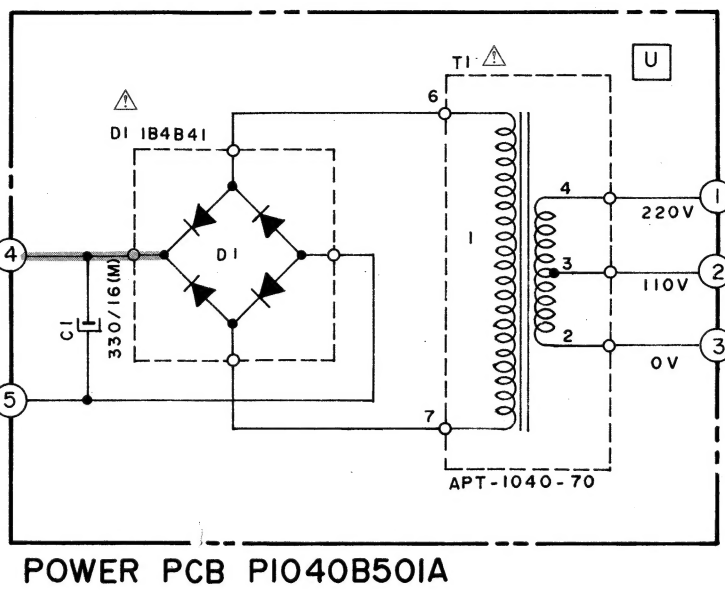
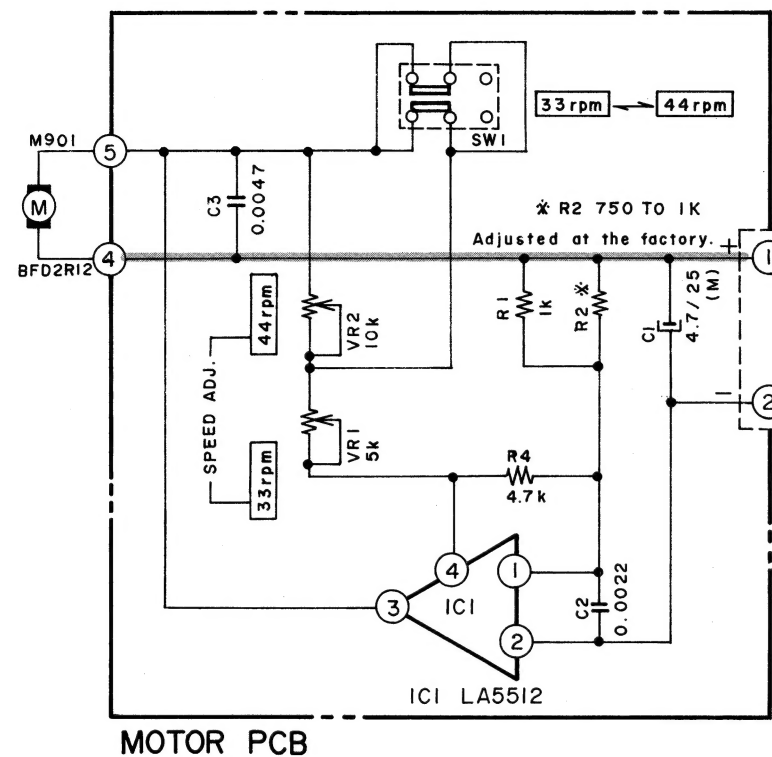
NOTE: OPTIONAL ACCESSORIES

CARTRIDGE PC-35

STYLUS RS-33

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WARNING: Δ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

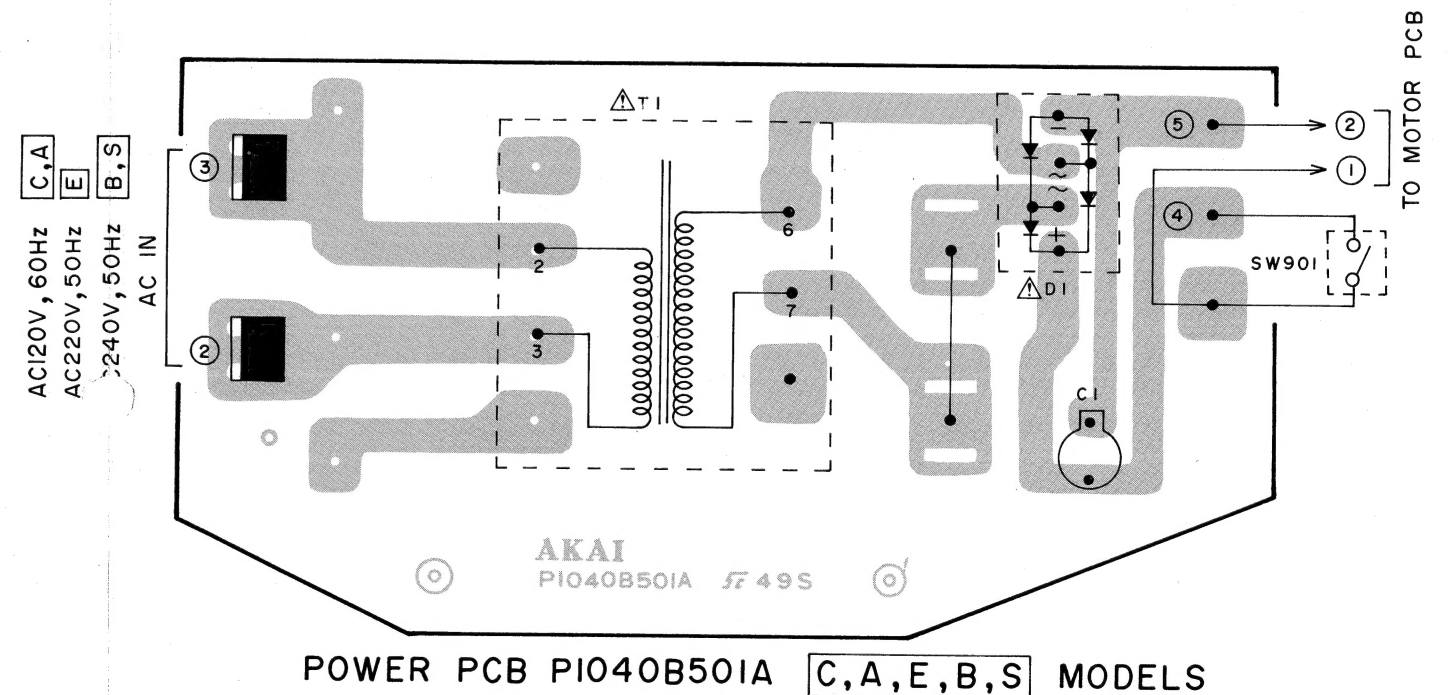
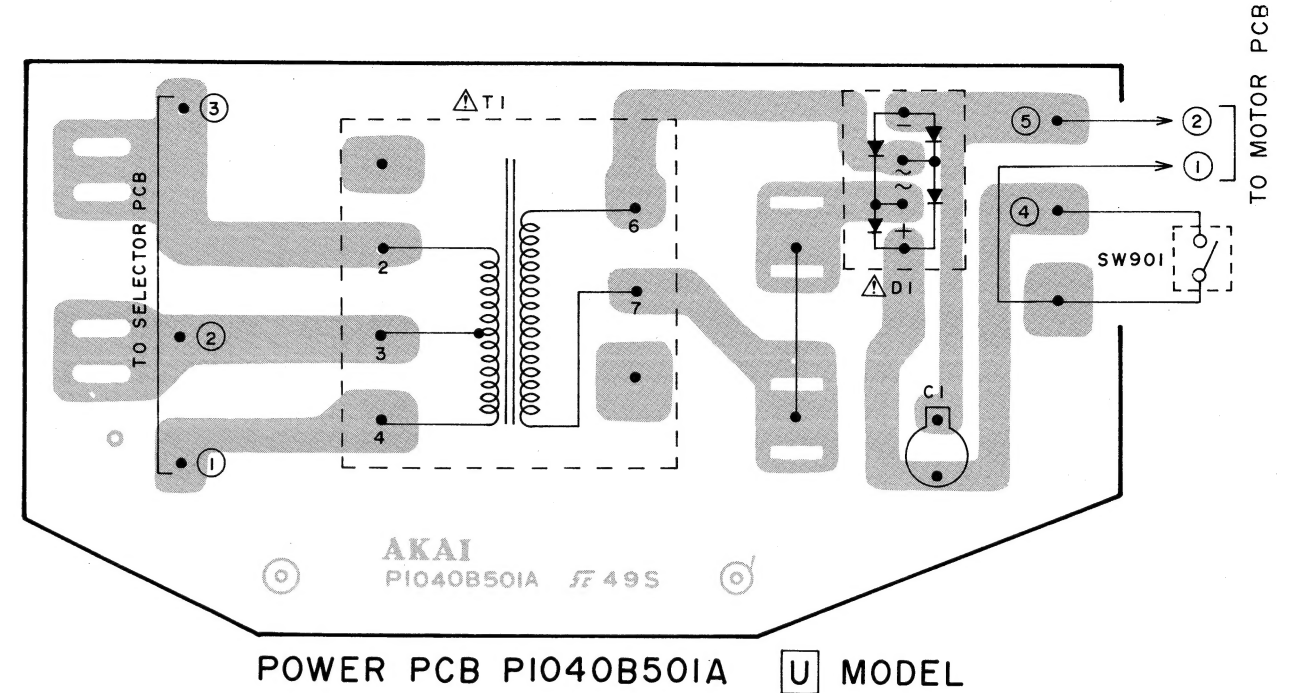
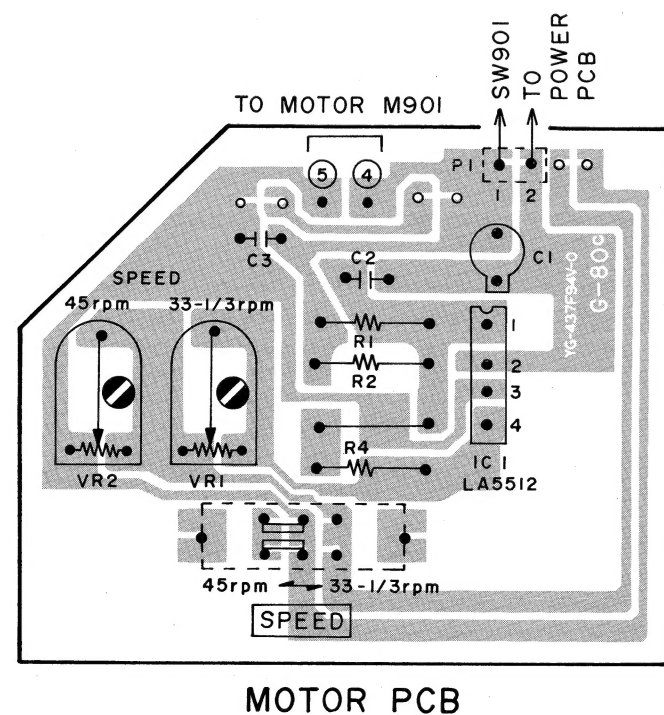
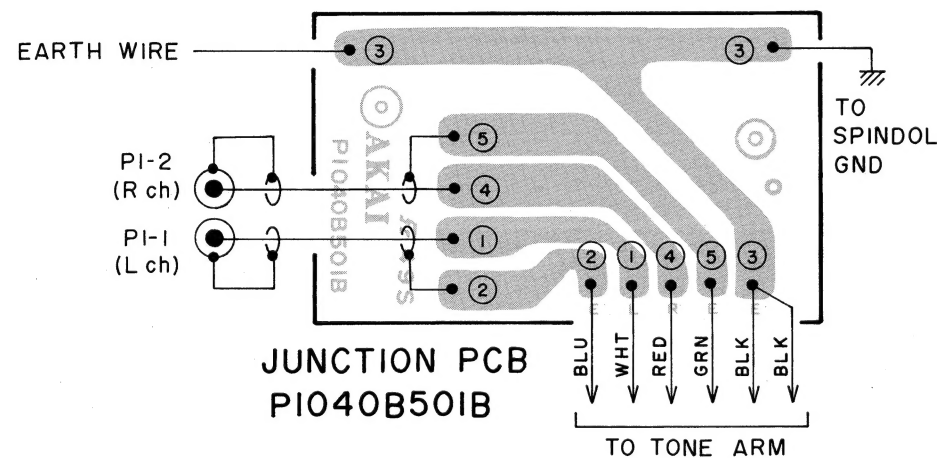
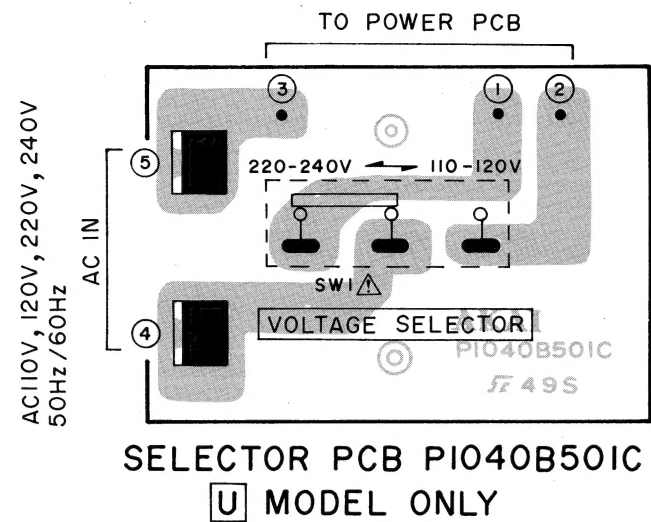
AVERTISSEMENT: Δ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W(J)
ALL CAPACITORS IN μ F 50WV(J)
POWER TRANSFORMER IS DIFFERENT
ACCORDING TO AREA

— = B (POWER SUPPLY) LINE

AP-XI/C
SCHEMATIC DIAGRAM
No. 840809A (A3)

AKAI MODEL AP-X1/C PC BOARD SCHEMATIC DIAGRAM



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